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Leopold Center for Sustainable Agriculture

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Local foods boost regional economies

By LAURA MILLER, Newsletter editor

A new report from the Leopold Center looked at the positive impacts of local food on the state's economy and this sector's tremendous potential to benefit rural communities and farm-based businesses.

The findings are part of an evaluation of the Regional Food Systems Working Group (RFSWG) that supports local food systems in 90 of Iowa's 99 counties. It is the first coordinated, comprehensive attempt to measure actual economic and community impacts associated with regional food system development in Iowa.

The evaluation tracked nearly \$9 million in local food purchases by grocery

stores, restaurants and institutions in 2012, as well as \$10.5 million in sales from Iowa farm-based enterprises that marketed their products locally in 2012.

Nearly 180 businesses and individuals participated in the data collection effort, including 74 buyers and 103 producers of local foods. The evaluation also measured job creation as a result of local food production, processing or utilization, and counted funds leveraged by the regional food groups that comprise the statewide RFSWG network.

"Most of the information we've had in the past came from economic models, that is, projections based on potential

REGIONAL (cont. on page 6)

Who owns Iowa's farmland: Big changes ahead

We are on the edge of an historic transformation in farmland ownership. Experts predict that 70 percent of farm and ranch land in the United States will change hands in the next 20 years.

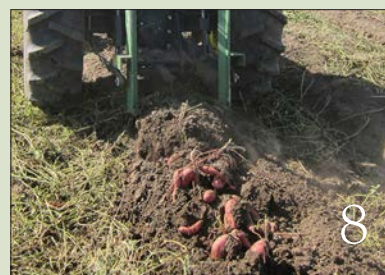
In Iowa, the percent of farmland owned by people over age 75 has more than doubled in two decades. Today more than half of Iowa's farmland is owned by someone 65 years old or older. The number of women farm owners also is growing, with the possibility that 75 percent of the upcoming farm property transitions may shift land to female ownership.

In the past five years, farm real estate values have more than doubled, making it more difficult for beginning farmers to enter agriculture. The latest survey of landowners shows that 75 percent of leased farmland in Iowa is under a

cash rent arrangement. Although the shift to out-of-state land holdings may have leveled off here, 21 percent of Iowa farmland is owned by people who are not full-time residents and may have a different view of stewardship. Iowa veterans are a new group looking at farmland opportunities—how do we help those returning from recent military service and have an interest in farming?

All of these issues are related to land tenure. That's why we've asked Drake Agricultural Law Fellow Ed Cox for an update on the Sustainable Agricultural Land Tenure Initiative, which began with funding from the Leopold Center's Policy Initiative. On page 4, he shares what he's learned, and offers some ideas to help landowners and tenants arrive at more sustainable arrangements for managing the land.

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LEOPOLD CENTER

LEOPOLD LETTER MISSION

The mission of the *Leopold Letter* is to inform diverse audiences about Leopold Center programs and activities; to encourage increased interest in and use of sustainable farming practices and market opportunities for sustainable products; and to stimulate public discussion about sustainable agriculture in Iowa and the nation.

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The Leopold Center for Sustainable Agriculture seeks to identify and reduce adverse socioeconomic and environmental impacts of farming practices, develop profitable farming systems that conserve natural resources, and create educational programs with the ISU Extension Service. It was founded by the 1987 Iowa Groundwater Protection Act. The *Leopold Letter* is available free from the Leopold Center at 209 Curtiss Hall, Iowa State University, Ames, Iowa 50011-1050; (515) 294-3711.



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News & Notes

The Leopold Center is one of four university programs that will sponsor the *Journal of Agriculture, Food Systems, and Community Development* over the next three years. The five-year-old publication, also known as the *Food Systems Journal*, is a program of the nonprofit Center for Transformative Action affiliated with Cornell University. Other organizations involved with this sponsorship are the Johns Hopkins Center for a Livable Future; the Institute for Sustainable Food Systems at Kwantlen Polytechnic University in British Columbia; and the Food Systems Initiative at the University of Vermont.

...

The Leopold Center and the Iowa Water Center collaborated on a call for research proposals on climate variability and its impacts on water management. The call is funded by a program of the U.S. Geological Survey and the Leopold Center funds will be used to increase the number of projects in Iowa. There were eight grant applications, and three were selected for funding.

...

Landowners who want to combine forestry and agricultural practices to increase sustainability and generate income are invited to read profiles of four farm families who have found success in this area. The case studies were developed by the Mid-American Agroforestry Working Group (MAAWG), coordinated by the Leopold Center. Find the case studies at:

<http://midamericanagroforestry.net/agroforestry-case-studies>

...

Photo contributed by Tom Isenhardt



One of the Leopold Center's popular online Cool Tools is now available in a printable format. The Post-Harvest Handling Decision Tool describes handling systems for different types of fruit and vegetables and offers general considerations to set up a post-harvest handling system. The online tool was created in 2009 by the Fruit and Vegetable Working Group and recently was adapted as a 24-page publication by the Center for Integrated Agricultural Systems at the University of Wisconsin. See:

www.leopold.iastate.edu/cool_tools/post-harvest_handling_decision_tool

...

Cultivate Iowa was selected by Grinnell Mutual Reinsurance Company to receive a non-profit community grant. Cultivate Iowa is a social marketing campaign to encourage food gardening to improve household food security and to encourage gardeners to donate extra produce to food pantries in their community. Almost \$1.5 million in donated media and services were leveraged during the inaugural 2013 campaign. The program is a project of the Iowa Food Systems Council's Food Access and Health Work Group that was formed as part of a grant from the Leopold Center. The funds from Grinnell Mutual will fund the 2014 Cultivate Iowa campaign, scheduled to begin in March.

...

Saturated buffer research supported by the Leopold Center has led to a national grant to continue the work. Tom Isenhardt, ISU Natural Resource Ecology and Management, and Dan Jaynes, soil scientist for the USDA-ARS National Laboratory for Agriculture and the Environment, will receive \$489,191 over three years from the USDA Agriculture and Food Research Initiative. The system routes tile drainage water into a riparian buffer before the water reaches the stream. Initial research showed that the system could handle at least 50 percent of tile flow. Additional tests will be conducted at the existing Bear Creek watershed site in Story County and on another new site in Hamilton County. Details on our Signs of Change web page:

www.leopold.iastate.edu/change

Conversations

WITH DIRECTOR MARK RASMUSSEN

An 'inconvenient' landscape



A lot of ink and energy has been expended lately debating many aspects of market demand, crop acreage and land use. I recently traveled back to the fields of northeast Nebraska and the trip stirred some observations on land use which I thought I would share. If you decide to follow me on your own field trip, be prepared to travel on some minimal maintenance roads. Four-wheel-drive is recommended on some if you travel when it is wet or icy.

Northeast Nebraska (or Ag District 30 in National Agricultural Statistics Service, NASS, lingo) consists of 13 counties in the northeast portion of the state west of Sioux City. Not unlike a lot of counties in western Iowa, this region has a topographically variable landscape or in more direct terms, some really steep hills with slopes (up to 30 percent) that are destined to impress or frighten flatlanders. Historically this has been an area of mixed agriculture with some of the steeper land reserved for grassland, pasture, forest and all-around good wildlife habitat.

However in the past 20 years and especially in the last few years, this "variable topography" has been farmed as intensively as if it were east central Illinois. It was a pretty good year in District 30 in 2013 as timely rains spoon-fed the crop to produce some impressive yields.

There is more to the story than this year's good crop however. A portion of this landscape is poorly suited to large machinery and extensive tillage. The use of both damages the land through runoff and soil erosion. A lot of this land never had an abundant layer of topsoil to start with, and as this thin topsoil has eroded, farmers have found they can now get yield responses with micronutrient fertilizers. The intensity of crop production in the region is pretty obvious and District 30 would be a primary stop on any tour I would give to an agricultural policy wonk or politician who desires to see agricultural policy in action. I would try to explain with visual examples that this is a two-part issue.



A fence buried by soil erosion.

In District 30 the NASS data clearly show how much acreage has been converted to corn production. From 2000 to 2006, an annual average of 2,757,142 acres was planted to corn and soybeans. In 2011 and 2012, the corn/soybean acreage increased to an average of 3,063,500 acres. This is an 11 percent increase in acreage, essentially all planted to corn since soybean acres actually changed very little. Those new acres primarily came out of pasture, grassland or woodland, as any county road tour would reveal. Tree piles yet to be burned can be seen and I know of land now in corn that had been in brome or other grasses for the previous 40 to 50 years. There is really no surprise here, given the rise in corn prices since 2010.

But cropland conversion is only part of the story. We also must consider how we farm the land that we plant to row crops. With large machinery and an "inconvenient" landscape, the waterways and older terraces usually are the first to go. On the steepest hillsides, the easiest way to farm is straight up and down the slope. Road ditches also have become valuable real estate and their conversion to row crops is usually a multiyear encroachment process. First the grass field borders disappear and next the fence goes when there is time to rip it out. Road cuts can then be smoothed and reshaped over a couple of seasons so that the outside row can be planted in the bottom of the road ditch after it partially fills with silt. In time the ditches as well as the road culverts will silt full and runoff will flow over the road and threaten the integrity of the road bed. Someone will then call the county road department with a complaint.

I realize I am describing farming in this region in pretty harsh terms. To those farmers who use no-till, contour farming, terraces, waterways, grassland and other soil-saving practices, I offer my support and extend my compliments. Please keep up the good work. Maintaining healthy soils on a farm is a long-term effort of dedication, persistence and patience.

I will close with one final note. In recent years, the livestock industry has acknowledged and come to grips with animal welfare and cases of abuse. It has not been a comfortable process but industry leaders realized it had to be done. After following the livestock situation and their struggles I wonder when the row crop industry will deal with the same painful issues with regard to soil. Recent efforts are encouraging, but there's much more that needs to be done.

As the old saying goes about land; "They ain't making any more of it." When the land is abused and soil washes off the hillside, it is gone. And when that happens we all lose something that we hold in trust for future generations.

Mark Rasmussen

Conservation in farm leases: No 'one size fits all'

By ED COX, Drake Agricultural Law Center Fellow



In 2009 the Leopold Center and Drake University Agricultural Law Center launched the Sustainable Agricultural Land Tenure (SALT) Initiative to examine the legal arrangements that govern management authority of Iowa's agricultural land. Its purpose is to determine both the effects of current tenure arrangements on sustainability and resilience, and the potential for such arrangements to leverage sustainability.

The name of the project itself reveals its ambitious scope. The initiative addresses the diverse elements of sustainability including conservation of the state's soil, water and biodiversity; the well-being and success of landowners and farmers; and the promotion of healthy rural communities. This necessarily entails land tenure arrangements that promote conservation while ensuring adequate income, healthy products and a place for beginning farmers. It also tackles the ever-increasing diversity and changing nature of land tenure arrangements including leases, easements, trusts, corporate bylaws, production contracts and land sale contracts to name just a few options.

Since I joined this project in 2010, I have met hundreds of people and worked with countless landowners and farmers, as well as those new to both sides of the farm business. By far the most popular questions deal with conservation—how landowners can make sure it's carried out on their land, and how tenants protect themselves when they use conservation practices.

It is most important is to acknowledge that there is no one sustainable way to farm, and therefore, no "perfect" sustainable farm lease or other tenure arrangement exists. Legal arrangements must take all of the landowner's and farmer's concerns into account. Likewise, Iowa's landscape is simply too diverse, requiring different practices and provisions within each lease. A one-size-fits-all model farm lease is simply not workable for Iowa agriculture.

We are in the process of preparing case studies to assist in the process of creating sustainable land tenure arrangements. We encourage people to identify their priorities and communicate them to qualified advisors, such as attorneys and accountants, and then negotiate contracts that benefit both parties and the land.

On the SALT website:

<http://sustainablefarmlease.org>

- A library of more than a dozen short videos, including a special section for women landowners.
- A printable *Landowner's Guide to Sustainable Farm Leasing* (56 pages) with sections that cover the basics of sustainability and farm leases, determining priorities, talking to your tenant, an overview of contract law, and what should go into a farm lease agreement.
- A decision tree with various questions to answer and additional considerations.
- A printable *Quick Reference Guide* (8 pages) that explains the landowner's role in promoting sustainability on the land.
- An extensive reference section with glossaries, links and examples of form leases from other organizations.

Different approaches may be necessary based on a tenure arrangement's duration—the longer the arrangement, the more general and flexible the provisions. A year-to-year lease may have very specific conservation provisions requiring no-till or the use of cover crops, while a trust may generally state that its purpose includes conservation goals, such as maintaining soil productivity and enhancing water quality. The following ideas may help landowners and farmers adopt sustainable arrangements.

Know thyself

Determine your priorities, including short- and long-term income goals, succession desires, land ethics, sentiment, community concerns, and specific conservation concerns, is critical to adopting a sustainable land use arrangement.

Know your legal role

This includes the legal obligations of landowners relating to conservation, but also the landowner's ultimate control of the land and the power to contract. The parties to a contract may enter into any agreements they wish as long as they are for a legal purpose.

Communication is critical

Communicating needs and priorities while negotiating contracts can result in creative arrangements that address the needs of both parties and the land. A few of the key considerations that can incentivize farmers to enter leases with conservation requirements include sharing in the costs of conservation, sharing the risks that may be derived or simply perceived as arising from certain conservation practices, and providing longer term tenure or reimbursement for practices that enhance a farm's soil.

Communication should not stop with negotiations. Mandatory communication can be part of a contract, such as establishing annual or bi-annual meetings between a landowner, tenant, and NRCS or other conservation service providers or requiring conservation reports with soil tests on a periodic basis.

Address it in writing

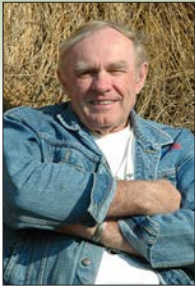
Put specific conservation issues in the contract. Written leases are becoming more common but in relation to conservation there seems to be a prevailing, "Oh, my tenant takes care of things," system. The details of "taking care of things" need to be in writing.

Don't rely on provisions that require compliance with existing regulations. These provisions should be in the lease to protect the landowner but reliance on them may be misplaced. Regulations may not address the party's conservation concerns or may not go far enough to protect the land or other resources.

Pass it on

Encourage people to share information about current farm operations and land tenure arrangements with the next generation of landowners. As ownership of Iowa farmland is passed on, often to out-of-state or other non-farming landowners, it's important for them to understand the importance of conservation and how to legally ensure continued sustainability of the land.

There are an infinite number of variations of land tenure arrangements that result in a sustainable farm operation. Figuring out the right arrangement will take hard work, careful examination of personal and financial priorities, and frank communications.



TOWARD A SUSTAINABLE

Future

Rethinking evolution: From competition to cooperation

*By the time Darwin published *On the Origin of the Species* in 1859, the Western European and American mind had long been intellectually primed to interpret complexity by reducing perspective to the individual. Adam Smith's publication of *The Wealth of Nations* 83 years earlier had set the tone of philosophical and scientific approaches to understanding complex systems. Fundamental to Smith's philosophy ... was the notion that large organizations like the economy were to be "comprehended in terms of self-interest or maximization of personal well-being." Smith's influence on Darwin was as strong as it was on the rest of the reading public.—Bradford Harris*

In an article published in the online *American Scientist* (2013), Bradford Harris provided an intriguing interpretation of the theory of evolution. Originally titled "Evolution Reinterpreted: Survival of the Friendliest," Harris' article pointed out that Darwin's original theory of evolution was heavily influenced by the philosophy of Adam Smith and that this version of evolution became extremely popular for two reasons: "It morally liberated people to be selfish, and it intellectually liberated them to interpret a range of complicated questions in terms of simpler individual parts."

All of this, of course, created a culture of science that still largely determines how we view our world today. We tend to simplify complex systems by reducing them to individual parts that we can control, and ignore the dynamic interdependent relationships of complex systems which evolve in largely unpredictable ways. This philosophy also largely determines how we practice agriculture. In agriculture we tend to view nature as an uncooperative opponent to be dominated and subdued, we believe we must simplify problems so they are receptive to single-tactic solutions, and that farmers can be successful only if they adopt this "survival of the fittest" mentality.

Unfortunately, this prevailing cultural meme not only influences how modern agriculture operates but it also largely determines how we shape our society—and often not for the better. As Wilkinson and Pickett (both health care professionals) put it in their new book, *The Spirit Level: Why Greater Equality Makes Societies Stronger*: "Instead of a better society, the only thing almost everyone strives for is to better their own position—as individuals—within the existing society." They point out that this produces a society driven almost solely by individual self-interest and domination, rather than cooperation and harmony, creating a society that is increasingly dysfunctional.

This culture also leads us to regard nature as an enemy to be conquered, rather than a partner that can be capable of contributing to our health and well-being.

Wilkinson and Pickett further argue that this cultural meme fosters the incredible inequality that plagues most of the world and now demonstrably contributes to civic unrest and the degradation of our quality of life. Such inequality also contributes to the loss of both our personal health, and the social and ecological health of our communities. Unfortunately, our awareness of this

loss of health leads us to attempt to compensate for these losses by **further** increasing our consumption and exploitation, and pursuing unlimited economic growth, which mostly amplifies our unhappiness.

Wilkinson and Pickett argue that this cultural meme is the greatest challenge confronting us in the 21st century, and that we have now gotten "close to the end of what economic growth can do for us." Concrete evidence lies in the fact that "Economic growth, for so long the great engine of progress, has, in the rich countries, largely finished its work. Not only have measures of well-being and happiness ceased to rise with economic growth but, as affluent societies have grown richer, there have been long-term rises in rates of anxiety, depression and numerous other social problems."

Further concrete evidence may be revealing itself in rather unusual spheres. An article recently published in the *Proceedings of the Royal Society* (Crockford et al 2013) reveals some of the science explaining why some non-human animals, like chimpanzees, tend to establish cooperative, rather than competitive, relationships and how that serves their individual interests.

So we have now reached a point where the new theory of evolution—the "survival of the friendliest" instead of the "survival of the fittest"—and new social theories that set the path to health and quality of life based in cooperation and harmony instead of domination and conflict. All converge to lead us in a new direction with the potential to heal both our planet and ourselves.

Bradford Harris

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SUPPORTING LOCAL FOOD

IMPACTS (continued from page 1)

scenarios and assumptions, not what actually happened during a specific time period,” said Leopold Center associate scientist Corry Bregendahl, who coordinated the data collection project.

She said the report also differs in the type of sales information that was collected, which included data from institutional and intermediary markets as well as direct sales.

“Most people think local food sales are only those between farmers and individual consumers, such as farmers markets or community supported agriculture (CSA) enterprises,” she explained. “We also measured sales to institutions such as hospitals and nursing homes, schools, grocery stores and restaurants. These represent huge potential markets for local foods, and serve a population that needs greater access to healthy food.”

Bregendahl and the coordinators of the 15 regional food groups in the RFSWG network collaborated to gather and assess the data. The coordinators distributed surveys to area buyers and farmers they worked with to collect information about these key indicators of economic impact:

- **Local food purchases in 2012:** 74 buyers reported total purchases of \$8,934,126.
- **Local food sales in 2012:** 103 farmers reported total sales of \$10,549,296.
- **New jobs related to local food in 2012:** A total 36 new jobs (24 full-time equivalent) were created in 2012 (reported by a subset of buyers and farmers).
- **Funds leveraged by eight regional food groups in 2012:** \$766,020.

Bregendahl said the 74 buyers spent an average of \$120,700 on local foods, or about 8.7 percent of their total food budget. If local food purchases were increased to 30 percent of the total food budget, an additional \$21.5 million in sales would have been generated, leading to the creation of 71 new full-time buyer-based

jobs. Less than half of 1 percent of the estimated 22,000 institutional and intermediary markets in Iowa participated in this evaluation.

“When you look at jobs related to public money invested in the local food groups, we found that it’s relatively inexpensive to create full-time employment opportunities in Iowa communities,” she said. Calculations showed that it cost the public \$17,874 to support one new FTE job in the local foods sector. “Local foods commerce expands and complements what we’re already doing in Iowa agriculture; it does not compete with it,” Bregendahl added.

The evaluation reflects efforts throughout Iowa by RFSWG’s 15 geographically-based groups. Each group works with different stakeholders—farmers, food-based businesses, non-profits, Extension, Resource Conservation and Development organizations, educational institutions and government agencies—to support local food systems development in their region.

www.leopold.iastate.edu

Economic Impacts of Local Food:
www.leopold.iastate.edu/local-food

Our local food champions

In Des Moines, children from financially-strapped families learn how to prepare snacks from in-season fruits and vegetables. In northwest Iowa, a shrimp farmer spreads the word about his farm-raised product. A beekeeper expands his business and an eastern Iowa farmer processes fruit when they’re most abundant and at peak quality. These people are Iowa’s local food champions in action, where interest in local food is turning heads and returning profits. In some cases, expanded markets help families bring other members into the business, or stay in business at a more successful level.

We gathered these stories to show a few examples of how regional and local food systems are being built in Iowa. All were produced as part of an evaluation of the Regional Food Systems Working Group, or RFSWG. Like the economic data collected by RFSWG members throughout the state, these profiles are not visions of how a local food system could work, they are concrete examples of how local food systems are working in Iowa. Most of the profiles were written by Leopold Center program assistant Arlene Enderton, who helped compile data for the report.



Photo contributed by Lyn Jenkins

The following profiles are available on the Leopold Center’s “Economic Impacts of Local Food in Iowa” web page:

- Tom Arnold selling local meat in eastern Iowa
- Lyn Jenkins, nutrition educator in Des Moines
- Chad and Keely Dutler, farm-raised shrimp for Sioux City
- Pat Ennis, beekeeper
- Barbara Grijalva’s vegetable operation near Fairfield
- Nick McCann, creating worksite CSAs in northeast Iowa
- Paul Rasch, marketing fruit from Wilson’s Orchard
- University of Northern Iowa Dining Services
- Ed Kraklio, Melissa Freidhof-Rodgers, Quad Cities Food Hub
- Chef Bob Newell, Lakeshore Grill at Honey Creek State Park
- Dale Raasch, high tunnel grower in Adair County

Dream to Farm: A micro-farming success story

In an effort to “grow local farmers,” Iowa Western Community College (IWCC) has launched a successful continuing education course that trains Council Bluffs area residents to produce food on small parcels of land for local markets.

Matt Mancuso, sustainability coordinator at IWCC, says the Dream to Farm: Micro-Farming course fills a need in the push to advance local food systems and reduce the number of food deserts in southwest Iowa. Rural residents seek access to affordable, freshly produced local food, and many residents who attended gardening classes at the college requested information on how to start small farms of their own.

“I saw the interest was there,” said Mancuso. He also points out that farmers markets have been increasing their sales by 15 to 20 percent per year, a demand that new growers could fulfill with the right training, providing a welcome boost to the local economy.



In 2012, he and Bahia Nightengale, then local foods coordinator at Golden Hills Resource Conservation and Development (RC&D), received a one-year Leopold Center Marketing and Food Systems Initiative grant. They were to develop a curriculum on micro-farming, that is, intensive farming on plots of land, often between two and four acres in size, in both rural and urban settings. They collaborated with a group of local farmers, IWCC horticulture instructors and local food advocates to identify topics for instruction. These included business planning; local processing, shipping and marketing opportunities; and sustainable farming practices for soils, animal husbandry, irrigation and integrated pest and disease management.

A 14-week course was offered twice in 2012 with 20 of the 29 enrolled students completing it. Seven are now producing food for local markets and another seven graduates are either scaling up their production or working in the local food sector. Some of the students included community college educators and local government representatives interested in the local food movement.

“The information in the course was an eye-opener,” says Mancuso, to the extent that some people did not complete the course—because they hadn’t realized how much work went into food production. But there were other unexpected outcomes. Three students became local food industry educators, with one directing a community garden.

Success stories include Janna Feldman, who raises goats and sheep and produces milk, cheeses and soaps. Her business, Doe’s and Diva’s Dairy, Inc., needed urgent restructuring after losing a production partner in early 2012. “It was devastating,” she says, adding that Nightengale pointed out the Dream to Farm course as a solution.

Feldman and her husband, Tom, took the course and worked with the instructors to develop a new business plan—one that would allow them to add on a storage and processing facility for their milk and cheese, as well as showcase their operation to customers and potential financiers. Their efforts paid off, catching the attention of former IWCC president Carl Heinrichs, who put the

Feldmans in touch with a local bank that is now financing Doe’s and Diva’s new milk house—just in time for the 2014 milking season.

Another graduate, Ali Clark, works with six others on Big Muddy Urban Farm, established in 2012 in the Gifford Park neighborhood of Omaha. Big Muddy aims to increase access to affordable local food, and Clark learned through the course how to select opportunities that matched their farm’s goals.

“It was important to think through our mission and vision statement and use that in decision making and as a self-proclaimed structure for what types of things we choose to do,” she says.

Some of her initiatives for Big Muddy include partnering with a farmers market in the area and continuing a 25-member CSA with shares traded for work, land and kitchen space. Big Muddy also partners with Table Grace Café, a pay-as-you-can restaurant—in keeping with the farm’s goal of providing healthy food to patrons regardless of economic circumstances.

The Dream to Farm course was envisioned as a shareable resource for other Midwest institutions. Initially offered to residents in Cass, Fremont, Harrison, Mills, Page, Pottawattamie and Shelby counties in southwest Iowa, the curriculum has been made available to all 11 of Iowa’s community colleges. It has been promoted with Des Moines Area Community College, Kirkwood Community College and Northwest Iowa Community College. Instructors from Metro Community College in Omaha took the course in May to learn how to adapt it for use in their state; their college now offers an Urban Farm program modified from the Dream to Farm curriculum.

Golden Hills RC&D leveraged an additional \$16,050 from the USDA Rural Business Enterprise Grant program to offer the Dream to Farm course once in 2013, and twice in 2014. The course begins again in January. It includes hands-on labs and field trips, and emphasizes mentorship and relationship-building with multiple instructors, including local farmers and local food advocates.

“From the beginning, there was an effort to connect the students with as many resources as possible,” says Mancuso. “Many of the local producers became mentors to our students in this process.”

www.leopold.iastate.edu
Leopold Center grant information:
www.leopold.iastate.edu/grants/m2012-13

Course and sign-up information:
www.iwcc.edu/Continuing_Education/work_related/environmental.asp

Big Muddy Urban Farm’s end-of-season community potluck, the Full Moon Feast. Says Clark, “We gathered with neighbors around food and celebrated the abundance of our fall harvest!”



Photo contributed by Ali Clark

Growing sweet potatoes in Iowa: A recipe for success

By GEETHA IYER, Leopold Center Graduate Communications Research Assistant

For two consecutive harvest seasons, Ajay Nair and his team of researchers have unearthed an unusual vegetable from Iowa soil—the warm weather-loving sweet potato—confirming that the southern crop can be grown successfully in the Midwest.

The highly productive yields of these trials at the Iowa State University Horticulture Research Station north of Ames lead Nair to recommend that growers first identify a market before expanding their acreages to include sweet potatoes. He also suggests curing methods to preserve the vegetable for sale through the winter months.

Nair is a vegetable production extension specialist and assistant professor at the ISU Department of Horticulture. He has received financial support from the Leopold Center to establish his research program, which focuses on vegetables suited to Iowa's soil and climate types.

Sweet potatoes are typically grown in the South, where the hotter climate and long growing season meet the plant's needs. But Nair has found that by using black plastic mulch and drip irrigation, three cultivars of sweet potato—the Beauregard, Covington and Evangeline—produce yields very close to the national average of about 20,000 pounds per acre and, in one case, exceed this.

"If you're growing half an acre, or let's say one-fourth of an acre, you have 5,000 pounds! So, before growing, find a market," says Nair, adding that either the grower or buyer should have the ability to cure and store the produce so it doesn't go to waste.

Is that a hard sell? Not at all—sweet potatoes are rich in beta-carotene and other valuable nutrients, and also are high in sugar, and thus delicious. Additionally, like potatoes and onions, the sweet potato is "not a perishable crop." If the harvest is cured for 10 to 14 days at 85 degrees F and about 90 percent relative humidity—and then stored at about 55 degrees F—Nair has found that the crop will last 6 to 7 months.

"The farmer can harvest in the fall and then slowly sell it throughout the winter."

Nair points out that growing sweet potatoes in Iowa has the added appeal of being a niche product, since the big sweet potato producers are all out of state—North Carolina, Louisiana and California. He recommends that farmers appeal to buyers interested in promoting local foods throughout the winter, when fresh produce is scarce. With the right consumer base—such as farmers markets, CSAs, restaurants, schools or hospitals—farmers



Ajay Nair's favorite sweet potato recipe

- Peel and cut the potatoes into fries.
- Sprinkle them with garlic salt, ground pepper and olive oil. Let them sit for an hour.
- Pre-heat the oven 350 degrees F. Bake the fries on a tray on the middle rack for 30-40 minutes.
- Flip the fries over and bake again for 10-15 minutes.
- Now move the tray to the top rack and broil, watching very closely so the fries don't burn. Within two minutes, just as the fries start to scorch, take them out.

NOTE: Baking sweet potatoes at 350 degrees F activates enzymes within the vegetable that break down its starches to sugars, giving them their characteristic sweet taste.



Photos contributed by Ajay Nair

Nair holds several potatoes from the 2012 harvest.

can earn anywhere from the USDA wholesale price of 20 cents a pound to as much as \$1 a pound at the farmers market.

Nair has identified several growing and harvesting practices that suit the sweet potato plant's needs, particularly on the commercial scale. The key to success is controlling temperature and moisture—"Black plastic mulch is definitely a must. That gives you insurance against erratic weather."

The black plastic absorbs heat, warming the soil while retaining moisture. It also keeps out weeds, so that apart from an initial weeding between the mulch rows, the sweet potatoes need little hoeing or herbicide treatment. Their trailing vines soon cover the ground, making it hard for weeds to germinate.

Drip irrigation also is important for growing sweet potatoes in Iowa—particularly this year, with poorly timed rains and a very dry summer. "You don't need a lot," says Nair, "just uniform irrigation."

Nair will be comparing his two years of data against each other to learn more about the sweet potato's performance with drip irrigation and plastic mulch to control against climate variables. He also is looking at spacing requirements that maximize saleable-sized sweet potatoes—not too large or too small. And for commercial growers, Nair has found that sweet potatoes can be harvested using a U-shaped undercutter implement attached to a tractor. It pulls the potatoes up out of the soil, where they can then be easily picked up by hand.

Iowa State graduate student Brandon Carpenter uses an undercutter to dig sweet potatoes at the ISU Horticulture Research Farm north of Ames. They had a late, but plentiful harvest this year.

Liebman on sustainability: Value diversity, foster relationships

By GEETHA IYER, Leopold Center Graduate Communications Research Assistant

Matt Liebman might describe the job of a sustainable agriculture scientist as allowing people “to see what another world would look like”—a world with cleaner water, healthier soil, and more resilient and productive rural communities and ecosystems. It is the work of creating, testing and showcasing alternative farmscapes that are both ecologically and economically productive and resilient in the face of long-term change.

“Which is why I’m surprised that I would get this award,” he says of receiving the 2013 Spencer Award for Sustainable Agriculture. “I was just doing my job.”

Liebman, an agronomy professor at Iowa State University, has been the Henry A. Wallace Chair for Sustainable Agriculture since 2007. He has directed projects on low-input high-diversity cropping systems, integration of prairie strips among row-crops, livestock reintegration and organic soil management, ecologically-based alternatives to weed and pest management, and biofuel crop options with lower environmental impacts. He maintains strong ties with farmers across Iowa and has mentored numerous students in the Graduate Program for Sustainable Agriculture (GPSA) at ISU. The Spencer Award recognizes his diverse contributions with one consistent, recurring theme: the importance of interrelationships.

“The extent to which Dr. Liebman has maintained multiple, interdisciplinary experiments over the long-term is resounding evidence of his commitment to science, the people with whom he works, Iowa farms and farmers, and the future of our planet,” says ISU professor and researcher Lisa Schulte Moore.

Schulte Moore collaborates with Liebman on the STRIPs project (Science-based Trials of Rowcrops Integrated with Prairie Strips), the new conservation practice of cultivating narrow patches of prairie on row-crop fields to effectively control soil erosion and reduce nutrient pollution of water bodies in the Midwest. The experiment is receiving national attention, as well as interest from farmers, because it is cost-effective and provides multiple long-term benefits. Prairie strips now are being implemented on private farms to show others how they work.



Matt Liebman, in front of a depiction of agricultural visionary Henry A. Wallace. Liebman holds the endowed chair at Iowa State that is named after Wallace.

Photo by Rod Swoboda

“That’s a big piece of what I feel like I was hired to do,” says Liebman, “creating prototypes that people can look at, whether they’re farmers or consumers or policy makers.”

Also notable are Liebman’s findings on diversified crop rotations. Longer rotations that add small grains and alfalfa to conventional corn-soybean systems reduce the need for fossil fuel-dependent inputs such as herbicides and fertilizer. Instead, the more diversified system uses farmland ecology to increase crop yields—insects and rodents eat weed seeds, and soil health is enhanced by reducing soil disturbance.

Liebman emphasizes that the work of researchers at public institutions is both a reward and a duty—to explore important questions and then share what they’ve learned. He impresses upon his graduate students the same responsibility.

“We at the university have the luxury of time and not having to make a living with the crops we produce, so we can investigate some of the practices and processes that farmers may want to know about.”

Liebman’s interest in farming systems began at an early age. Since the mid-1970s he’s been exploring the question of how to feed people and support economies without being environmentally destructive.

www.leopold.iastate.edu

Report from the 2013 Spencer Award presentation:
www.leopold.iastate.edu/spencer-award/past-recipients/report-from-2013

In 1986, he was one of the first faculty hires to focus on sustainable agriculture at a land grant institute, the University of Maine. In 1998, he came to ISU to look at cropping systems, where he found a number of colleagues, including those at the Leopold Center, who shared his passion for sustainability and the resilience of agricultural systems.

His interdisciplinary approach to research is reflected in the series of distinguished mentors who guided his academic progress: as an undergraduate he studied pest management and crop breeding with ecologist and evolutionary biologist Richard Levins, plant ecologist Robert Cook, and economic botanist Richard Schultes. In graduate school he worked with physiological ecologist and evolutionary biologist Robert Robichaux, plant ecologist and weed specialist Herbert Baker and agricultural ecologist Miguel Altieri, as well as Altieri’s mentor Charles Francis.

He credits his mentors with emphasizing the value of using ecological and evolutionary biology as frameworks through which to understand and improve agricultural systems. He likewise mentors his graduate students to use these principles as foundations upon which to build their own careers.

“Almost all the students that come out of my group are doing things that I really couldn’t do myself. That’s a testament to their own abilities but also to how I view myself as a mentor, which is to encourage people and support them in developing abilities that I don’t have.”

The range of Liebman’s research projects offer multiple, complementary insights and many opportunities for using alternative farming practices that over time will strengthen agricultural production systems. Liebman credits these projects, and the relationships he has formed in both academic and farming communities, with advancing what he knows.

“That’s one of the better parts of my job. I’m always having to learn new things. Renewing your ignorance is a good way to stay engaged and interested.”

Students share sustainability lessons on the road

By LAURA MILLER, Newsletter editor

When a group of students from Ames High School (AHS) wanted to learn about sustainable agriculture last summer, one logical stop was Curtiss Hall to visit Fred Kirschenmann, the Leopold Center's Distinguished Fellow, national speaker, North Dakota farmer and philosophy professor.

The students were so impressed they tagged this trip a "Freducation," now explained in a poster-sized collage that combines photos with overlaid text. This image and others depicting sustainable farming practices were seen by thousands of Washington, D.C. subway travelers as well as policymakers who met with the students last fall.

It's all part of Project Localize, which began in Ames as a pilot program of the nonprofit Lexicon of Sustainability. The organization is designed to familiarize people with terms associated with sustainable food production through the use of informational artwork. The Ames students are hosting informal "pop-up" art shows to showcase what they've learned (see below).

AHS environmental science teacher Mike Todd said the posters are the culmination of a year-long study of agriculture and local food production. Last year, about 75 students toured central Iowa farms where they met fruit and vegetable growers, learned about composting and soil health, trekked through prairies, and saw fish raised in a converted livestock barn. In May, Lexicon founder Douglas Gayeton visited Iowa to show students how to document their experiences and create the unique Lexicon images.

So far this year, about 100 students have been involved in production of the posters on a variety of topics ranging from CSAs and high tunnels to the role of tile drainage in water quality. In October, Todd accompanied five students and the posters to Washington, D.C. The Lexicon group also bought a month of advertising space to display the AHS posters at the Smithsonian Metro terminal near the USDA building.

"When we went to Washington, the main goal was to voice our opinions and remind lawmakers that our generation and the public really need to be part of the discussion about how our food is produced," said Ania Chamberlin, an AHS junior who has been part of Project Localize.

She said she and her classmates were inspired by Kirschenmann, especially his "dedication to practical, sustainable methods for farming" and "big-picture" view of agriculture. They also appreciated the time spent by farmers and other experts to share their experiences. "There's no resource or textbook that can replace simply sitting down and having a conversation with someone as knowledgeable as Fred," she said.

Another goal of the project, Todd said, is to give young people a voice and to know how to discuss their ideas with adults. Chamberlin describes a tense moment during their visit with Senator Charles Grassley (R-Iowa).

"We had just finished the brief description of our images when he asked, 'But what about the economics of all this?' I felt a rush of confidence and I responded by explaining to him that when considering the economics of farming it is absolutely necessary to think about the long term. By using practices that work with nature instead of against it, a farm can actually be more productive because they will improve their soil health and ensure success for

the future. I also talked about the 50-year farm bill, which was something Fred brought to my attention and talked about in our meeting."

Todd said his students are continuing to create Lexicon collages. One USDA official has asked for their ideas about how to depict agroforestry concepts.

Kirschenmann also was impressed by the students.

"Students like this give me hope for the future," he said. "The amazing thing here is that I did not spend that much time with them—probably an hour and a half—which tells me that we can all make a difference if we just spend a little time with this generation having conversations about the important stuff."

Ames High students (from left) Ania Chamberlin, Cassie Kramer, Tessa Musa and Elena Ingram.



Photo contributed by Mike Todd

www.leopold.iastate.edu

Lexicon of Sustainability:
www.lexiconofsustainability.com

Unlock the Secrets of Soil:
www.nrcs.usda.gov/wps/portal/nrcs/main/national/soils/health

Shivers Lecture:
www.leopold.iastate.edu/news/calendar/shivers

Students bring Project Localize to ISU

People attending the Shivers Memorial Lecture will have an opportunity to hear from high school students learning about sustainable agriculture.

Students from Ames High School's Project Localize will host a "pop-up" art show they have created for the Lexicon of Sustainability. The show features posters that combine dozens of images with text to present information.

The lecture will begin at 7 p.m. on April 1. Students will be available at 6:30 p.m. and after the lecture.

Leopold's timeless quotes highlight Center's 2013 annual report

Sometimes you need to go back to your roots, and the FY2013 annual report for the Leopold Center is sprinkled with thoughts from Aldo Leopold's many writings. His words remain inspiring and thought-provoking and are well matched to many of the Center's current activities. The 36-page, full-color publication available in print and online describes the research, outreach and education activities sponsored by the Center in 2012-2013.

One highlight of this year's report is a summary of the evaluation of six long-term Center projects that yielded some fascinating statistics about the outcomes, impacts and

leveraging achieved. Data from the evaluation effort is featured in the annual report and in six impact statements available on the website.

The Center's FY2013 annual report also covers these accomplishments for the year just finished:

- Research conducted (and ongoing) for each of the four research initiatives and the competitive grants program
- Events held all over Iowa that were sponsored by the Competitive Educational Support Program
- Achievements of two young horticulture professionals supported by Center funds
- An overview of how Leopold funds

were used for the youth-oriented "Water Rocks!" education program

- ISU's Sustainable Agriculture Program celebrates 10 years with Leopold Center backing
- Fred Kirschenmann gives 24 keynote speeches on sustainable agriculture topics
- Shivvers Award lecturer (and World Food Prize laureate) speaks on global ag challenges

Copies of the Leopold Center's FY2013 annual report are available by calling 515-294-3911. Or you can view the report at www.leopold.iastate.edu/news/annual-reports

Lecture spotlights soil

Ray Archuleta, AKA "Ray the Soil Guy," is a soil evangelist. He will bring his entertaining roadshow to Ames on Tuesday, April 1 for the 2014 Shivvers Memorial Lecture in the Sun Room of the ISU Memorial Union.

Archuleta is a conservation agronomist for the Natural Resources Conservation Service. He has 25 years of experience with the NRCS working in New Mexico, Missouri, Oregon, and now Greensboro, North Carolina. He's held various positions ranging from technician, soil conservationist, nutrient-irrigation specialist, water quality project manager, to district conservationists and area agronomist.

More recently, he is one of eight spokespersons for the national NRCS campaign, Unlock the Secrets in the Soil. The campaign has captured some of Archuleta's show-and-tells in one-minute soil lessons. His approach most often is direct: "Soil is the engine of your farm's productivity" and "If you want to keep your soil healthy, discover the cover."

His lecture topic is "Farming for the 21st Century: How Improving Soil Health Will Help Landscape and Communities Absorb Disturbance and Maintain Function." Judging from past presentations, Archuleta will keep his audience engaged and well-informed.

Research Results

On the web: www.leopold.iastate.edu/news/results

Summaries

Easy-to-read summaries are available for these recently completed projects funded by Leopold Center grants:

- Investigating opportunities for enhancing farmers adoption of prairie strips in Iowa
- Iowa Farm Energy Working Group
- Micro-Farming: Reducing rural and urban food deserts through job training
- Research and development of an online local foods buying club cooperative
- The University of Iowa Biomass Partnership Project

Scientific Journals

Leopold Center-supported research has produced these papers published in peer-reviewed journals. Check at a research library or the journal's website for an abstract or full report. Additional information is available on each competitive grant (see ID number in brackets).

- Headlee, William L., R.B. Hall and R.S. Zalesny, Jr. (2013). Establishment of alleycropped hybrid aspen "Crandon" in central Iowa, USA: Effects of topographic position and fertilizer rate on aboveground biomass production and allocation, *Environmental Research Letters* 5(7): 2874-2866. doi:10.3390/su5072874
A project of the Landscape Biomass Research Team, which is testing profitable cropping systems to produce bioenergy feedstock on marginal lands. They have found that winter triticale paired with newly established aspens provides an early crop to harvest and doesn't compete with the young trees. [E2012-11]
- Gerken Golay, M.E., J.R. Thompson, C.M. Mabry and R.K. Kolka (2013). An investigation of water nutrient levels associated with forest vegetation in highly altered landscapes, *Journal of Soil and Water Conservation* 68(5): 361-371. doi:10.2489/jswc.68.5.361
Remnant forests next to streams capture nitrogen and aid water infiltration. Interactions between land use, plant community composition, and water quality outcomes can be used to more effectively target forest restoration efforts in landscapes highly impacted by humans. [E2011-05]
- Hernandez-Santana, V., X. Ahou, M.J. Helmers, H. Asbjornsen, R. Kolka and M. Tomer (2013). Native prairie filter strips reduce runoff from hillslopes under annual row-crop systems in Iowa, USA, *Journal of Hydrology* 477(16): 94-103. doi.org/10.1016/j.jhydrol.2012.11.013
At the Neal Smith National Wildlife Refuge, small amounts of native prairie vegetation strips strategically incorporated into the corn-soybean watershed in the Midwest effectively reduce runoff. [E2011-20]



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Highlight Events

More details, events

Check Leopold Center Web calendar:
www.leopold.iastate.edu/news/calendar

Learn about how to get support for events: www.leopold.iastate.edu/grants/education



2013 Spencer Award

Matt Liebman received the 2013 Spencer Award for Sustainable Agriculture from Elaine Spencer. Spencer established the award with her brother to honor their parents. She commended Liebman for his relationships with farmers, which her parents valued, saying he exemplified the intent of the Morrill Act that extended educational opportunities through the land grant university system.

Practical Farmers of Iowa Conference • Jan 24-25, Ames

“Well Grounded” is the theme of this year’s gathering. Keynote speaker is Ricardo Salvador from the Union of Concerned Scientists. The Leopold Center is a major sponsor for this event, which includes two short courses and 26 workshops.

Farmer Veteran Workshops • Feb 20, Ottumwa; Feb 22, Waterloo; March 13, Red Oak; March 15, Storm Lake

The Leopold Center is supporting the newly formed Farmer

Veteran Coalition of Iowa, which is hosting four workshops across the state on farm business development, sustainability and legal issues for veteran and military service members interested in Iowa agriculture. The coalition is also working with the Drake Agricultural Law Center to provide networking opportunities. Details at the IVC-Iowa website: www.iowafarmerveteran.org.

Eighth Annual Iowa Water Conference • March 3-4, Ames

The Leopold Center is a partner for this event that brings together water professionals, educators and researchers throughout Iowa. The theme is “Making Connections – Solving Problems: Water strategies for success in a changing world.”

Shivvers Memorial Lecture • April 1, Ames

“Farming for the 21st Century: Soil” will be presented by USDA soil scientist Ray Archuleta. He will discuss how soil health benefits the landscape as well as communities (profile on page 11).

Iowa Local Food Conference • April 8, Ames

Save the date for this annual event with inspiration and opportunities to connect with others in the local food movement. Three tracks will focus on the business aspects of local food production: food hubs and aggregation sites, marketing and value-added enterprises. Location is the Quality Inn in Ames. Leopold Center program assistant Lynn Heuss is in charge of arrangements.